



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/608,051	06/30/2000	Manuel Rosendo Arana-Manzano	4015-735	9426

24112 7590 12/16/2004

COATS & BENNETT, PLLC  
P O BOX 5  
RALEIGH, NC 27602

EXAMINER

BRINEY III, WALTER F

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/608,051

Applicant(s)

ARANA-MANZANO ET AL.

Examiner

Walter F Briney III

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 24-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

In order to expedite prosecution, the outstanding rejections presented in the final office action and upheld in the advisory action - filed 31 March 2004 and 09 June 2004, respectively – are withdrawn. In their place, the following non-final office action is respectfully submitted with new grounds of rejection based on different prior art. Other details about the reasons for withdrawing the previous rejections are presented in the proceeding section entitled Response to Arguments.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claim 1-6, 14, 16-18, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Freudberg et al. (US Patent 4,696,031).**

**Claim 1** is limited to *a method for detecting ringback in a received signal*.

Freudberg discloses a method and apparatus for signal detection and discrimination using waveform peak factor. In particular, Freudberg discloses detecting progress tones received during the connection of a telephone call. See Abstract, lines 1-3. As

Art Unit: 2644

depicted in 3, the call progress analyzer includes an energy measurement unit (80) and an energy threshold comparison unit (82). Freudberg discloses in column 5, line 65 through column 6, line 2, that the energy measurement unit (80) derives an energy estimate of an input waveform from line (24), which carries incoming and outgoing signals from telephone line (28) of figure 1. The energy estimate from unit (80) is passed to the comparison unit (82) to determine if enough energy is present for the recognition of a signal, including the presence of *ringback*. Freudberg also discloses that the threshold used in the above mentioned comparison varies based on the received signal's energy. In particular, see column 6, lines 3-14. After determining that a signal is present, an "on" status is registered and a determination is made as to what kind of signal it is based on other processing tasks beyond the scope of the current claim. As mentioned earlier, Freudberg discloses detecting a *ringback* during call progress detection, examples of this are depicted in figures 4C and 4E as well as the parts of the disclosure relating to those figures. The disclosure of column 10 includes mention of a RING-FLAG that indicates the presence of *ringback*, and the recognition of call states using the RING-FLAG, such as RING NO ANSWER and PHONE RINGING lines 50-54. Accordingly, when the call progress analyzer of figure 3 indicates any of the two states mentioned above the output corresponds to *the control signal indicating whether ringback is present* of the current claim. Therefore, Freudberg anticipates all limitations of the claim.

**Claim 2** is limited to *the method of claim 1*, as covered by Freudberg. Freudberg discloses that the threshold used in the energy comparison and discussed in column 6,

lines 3-14 is initially set to a value of 16, i.e. *setting said threshold to an initial value at the start of a call*, and is adjusted upward upon the received energy rising above the value 145, i.e. *and adjusting said threshold upwardly based on said energy of said received signal*. Therefore, Freudberg anticipates all limitations of the claim.

**Claim 3** is limited to *the method of claim 1*, as covered by Freudberg. The call progress analyzer of Freudberg is operable to report a plurality of states, a list is given in column 9, lines 24-35. One state is listed as MONITORING PROGRESS TONES, which refers to the state of the device during a silent interval. It follows that, changing the state of the call from MONITORING PROGRESS TONES to PHONE RINGING corresponds to *changing said control signal from a first state indicative of no ringback to a second state indicative of ringback when ringback is detected*. Therefore, Freudberg anticipates all limitations of the claim.

**Claim 4** is limited to *the method of claim 3*, as covered by Freudberg. It follows that after determining that the phone is in the PHONE RINGING state, it will be reset to the MONITORING PROGRESS TONES during a silence interval, i.e. *wherein changing said control further comprises changing said control signal from said second state indicative of ringback to said first state indicative of no ringback when ringback is no longer detected*. Therefore, Freudberg anticipates all limitations of the claim.

**Claim 5** is limited to *the method of claim 4*, as covered by Freudberg. Freudberg discloses that short "off" intervals or glitches are removed by requiring that "off" transitions are present for at least 100 msec, see column 6, lines 50-56, i.e. *further including maintaining said control signal in said second state for a predetermined period*

*of time after ringback is no longer detected before changing to said first state.*

Therefore, Freudberg anticipates all limitations of the claim.

**Claim 6** is limited to *the method of claim 1*, as covered by Freudberg. Freudberg discloses that the call progress analyzer of figure 3 is intended to detect the status of a telephone call for use in a number of devices, such as a device for placing calls for a user of the device, see column 1, lines 38-44. The device corresponds to *an audio processing circuit*. Therefore, Freudberg anticipates all limitations of the claim.

**Claim 14** is limited to *the method of claim 5*, as covered by Freudberg. The automatic telephone calling device disclosed by Freudberg monitors the state of the telephone call and transitions from an automatic mode to a manual mode when the call is completed to the called party, see column 1, lines 41-43, i.e. *wherein using said control signal to control an audio processing circuit comprises changing the operating mode of said audio processing circuit*. Therefore, Freudberg anticipates all limitations of the claim.

**Claim 16** is essentially the same as claim 1, as covered by Freudberg. For quick reference, the energy measurement device (80) corresponds to element a. of the claim, i.e. *an energy calculator to calculate the energy of a received signal*. The energy threshold comparison device (82) corresponds to both element b. and c. of the claim, i.e. *a threshold calculator to calculate a ringback threshold based on said calculated energy of said received signal and a comparator to compare said calculated energy of said received signal to said ringback threshold*. The call status output of the call

progress analyzer (68) of figure 3 corresponds to *a control signal indicative of ringback based on said comparison*. Therefore, Freudberg anticipates all limitations of the claim.

**Claims 17 and 18** are directed towards a ringback detector whose components are anticipated by the elements of Freudberg that have been shown to anticipate the method steps of claims 4 and 5, respectively, and are rejected for the same reasons.

**Claim 24** is limited to *a communications terminal* that is essentially the same as claim 6, as covered by Freudberg. However, claim 24 requires further treatment as discussed below. In particular, claim 24 includes *a receiver for receiving signals transmitted from a remote location*. This is clearly anticipated by a part of the voice attachment (22) depicted in figure 1 of Freudberg. Freudberg also discloses that part of the voice attachment (22) acts as a hybrid for 2-wire/4-wire conversion, see column 4, lines 53-57, i.e. *an audio processing circuit to process audio signals contained in said received signal*. The *ringback detector* has been shown to be anticipated by Freudberg in the rejection of both claims 1 and 16, however, claim 24 also recites that the *control signal is used to control said audio processing circuit*. When the computer is used for placing an outgoing call, as suggested in column 1, lines 38-44, the computer will be responsible for triggering a dial-tone by engaging the hook-switch and disengaging the hook-switch in the event the call is not answered. Thus, the controls (20) from the computer for controlling attachment of the voice attachment (22) device to the telephone line (28) described in column 4, lines 48-53, are based on the status of the call and the presence of *ringback*.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**2. Claims 25-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freudberg.**

Claims 25-31 merely indicate the presence of a plurality of well known signal processing devices within the audio processing device, which has been likened to the voice attachment (22) disclosed by Freudberg. However, Freudberg does not disclose nor recite any of these.

The examiner takes Official Notice of the fact that *voice activity detectors, acoustic echo cancellers, network echo cancellers, noise estimators, channel gain estimators, noise suppressors, and residual echo suppressors* were all well known at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to include any of the above mentioned signal processing devices in the voice attachment (22) disclosed by Freudberg for the purpose of improving signal reception and transmission.

**3. Claims 7-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freudberg in view of Gupta et al. (US Patent 5,649,012).**

Claim 7 is limited to *the method of claim 6*, as covered by Freudberg. The method disclosed by Freudberg is for the detection of a periodic ringback signal. Such



a detector has utility in various areas of telephony many of which are excluded by the disclosure of Freudberg. Therefore, Freudberg anticipates all limitations of the claim with the exception *wherein using said control signal to control an audio processing circuit comprises freezing an adaptive algorithm within said audio processing circuit when ringback is detected.*

Gupta teaches a method for synthesizing and echo path in an echo canceller. In particular, Gupta teaches that the presence of tones in a network path can cause false convergence, the result is that the echo path stored in the echo filter is tuned only toward the present tone, and that upon voice being presented to the filter, divergence will occur. See column 6, lines 33-47. To solve this, Gupta makes the echo canceller perform the steps depicted in figure 8 before the adaptive filter is updated. Step (124) depicts canceling update when a tone is present. Yet, Gupta does not disclose the details of the tone detector. Thus, the teachings of Freudberg and Gupta advantageously complement each other to create an echo canceller whose adaptive algorithm is halted upon detection of a tone, i.e. ringback, by the detector of Freudberg. It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the tone detector of Freudberg into the echo canceller with update halting as taught by Gupta for the purpose of providing an echo canceller whose coefficients are prevented from false update.

Claim 8 is limited to *the method of claim 7*, as covered by Freudberg in view of Gupta. Gupta teaches using a double-talk detector and far end speech detector for disabling the echo canceller's coefficient update process. See figure 8, steps (126, 128)

Yet again, Gupta does not disclose the details of the detector. Therefore, Freudberg in view of Gupta makes obvious all limitations of the claim with the exception *wherein said adaptive algorithm is a voice activity detector*.

Freudberg discloses that the ringback detector also detects the presence of voice. Upon detection of ringback, the output state is PHONE RINGING, thus the voice detector is frozen for that time. Therefore, Freudberg in view of Gupta makes obvious all limitations of the claim.

Claim 9 is limited to *the method of claim 7*, as covered by Freudberg in view of Gupta. While Gupta explicitly teaches a network echo canceller, the effect of tones on convergence is inherently present in *acoustic echo cancellers*.

The examiner takes Official Notice of the fact that acoustic echo cancellers were well known at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the tone detector of Freudberg within a well known acoustic echo canceller for the purpose of mitigating the false convergence effects of tones, including ringback, as detected by Freudberg.

Claim 10 is limited to *the method of claim 7*, as covered by Freudberg in view of Gupta. Gupta teaches *a network echo canceller*. See column 1, lines 5-36. Therefore, Freudberg in view of Gupta makes obvious all limitations of the claim.

Claim 11 is limited to *the method of claim 7*, as covered by Freudberg in view of Gupta. In the broadest sense, echo and noise are the same phenomenon, thus the echo canceller of Gupta corresponds to *a noise estimator*. Therefore, Freudberg in view of Gupta makes obvious all limitations of the claim.

Claim 12 is limited to *the method of claim 7*, as covered by Freudberg in view of Gupta. Echo cancellers determine the transfer function of a closed loop between the received and transmitted signal paths, therefore, the echo canceller taught by Gupta corresponds to a *channel gain estimator*. Therefore, Freudberg in view of Gupta makes obvious all limitations of the claim.

Claim 13 is limited to *the method of claim 7*, as covered by Freudberg in view of Gupta. In the broadest sense, echo and noise are the same phenomenon, thus the echo canceller of Gupta corresponds to a *noise suppressor*. Therefore, Freudberg in view of Gupta makes obvious all limitations of the claim.

Claim 15 is limited to the method of claim 14, as covered by Freudberg. Freudberg clearly does not disclose an echo canceller, not to mention a residual echo suppressor. Therefore, Freudberg anticipates all limitations with the exception *wherein said audio processing circuit is a residual echo suppressor and wherein said control signal is used to place said residual echo suppressor in a bypass mode*.

As shown in the rejection of claim 6, it would have been obvious to combine the tone detector of Freudberg with a network echo canceller as taught by Gupta. Furthermore, the examiner takes Official Notice of the fact that residual echo cancellers were well known at the time of the invention to perform algorithms, such as non-linear processing, on echo error signals. As is also known about residual echo suppressors, they are only operational during near-end silence periods. Thus, when a signal, be it tone, i.e. *ringback*, or voice, is present, the residual suppressors should be deactivated to avoid distortion of the near-end signal.

### ***Response to Arguments***

Applicant's arguments, see Appeal Brief, filed 03 September 2004, with respect to the rejection(s) of claim(s) 1-18 and 24-31 under Hinman (US Patent 5,390,244) and various other secondary references have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

In particular, page 7 of the appeal brief, section d, includes the analysis that in the rejection under Hinman, two separate references to energy were made. Upon further review of the rejection, the examiner agrees. While it is still upheld that the autocorrelation process is read on by *the energy* of the claim, it cannot be maintained that the autocorrelation coefficient  $R_0$  is the same as the sum of coefficients  $R_1$ - $R_{10}$ . The claim recites that the energy used in calculating the threshold is the same as the energy used in comparison against it, this is clearly not the case in Hinman, which uses  $R_0$  for threshold calculation, but  $R_1$ - $R_{10}$  in the comparison stage.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F Briney III whose telephone number is 703-305-0347. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WFB  
12/13/04

2  
  
**XU MEI**  
**PRIMARY EXAMINER**